AMENDMENTS TO THE CLAIMS

1-87. (canceled)

88. (new) A tubular for monitoring subsurface reservoir characteristics in a directed orientation, comprising:

an elongated metallic body with a longitudinal axis for permanent disposal within a borehole traversing the reservoir;

a plurality of openings formed along the tubular wall to allow for passage of electromagnetic energy therethrough, the openings formed at an angle with respect to the longitudinal axis of the tubular and sealed to prevent fluid passage;

a groove formed about the external circumference of the tubular in alignment with the openings;

an antenna disposed on the exterior of the tubular within the groove such that its axis is tilted with respect to the axis of the tubular, the antenna adapted to transmit or receive electromagnetic energy;

wherein the antenna is disposed on the tubular such that the antenna is perpendicular to the tubular openings at intersections of the antenna and openings; and

the tubular adapted for connection to another tubular to form a conduit for passage of subsurface fluids or gases through the reservoir.

89. (new) The tubular of claim 88, wherein the reservoir characteristic is resistivity.

90. (new) The tubular of claim 88, wherein the groove is formed at an angle with respect to the longitudinal tubular axis.

91. (new) The tubular of claim 88, further comprising at least one opening formed in its wall parallel to the longitudinal axis of the tubular to allow for passage of a signal therethrough and sealed to prevent fluid passage.

92. (new) The tubular of claim 88, wherein the openings are curved.

93. (new) The tubular of claim 88, wherein a plurality of antennas are disposed on the exterior of the tubular and spaced from one another, each antenna adapted to transmit or receive electromagnetic energy.

94. (new) The tubular of claim 93, wherein an antenna is disposed on the tubular with its axis angled toward the axis of the antenna disposed within the groove.

D' (cont'd)

95. (new) The tubular of claim 88, wherein the antenna comprises a plurality of coils having non-parallel axes.

96. (new) The tubular of claim 88, further comprising a wireline coupled to the antenna, the wireline adapted to carry a signal to or from the antenna.

97. (new) The tubular of claim 88, wherein the groove comprises a plurality of antennas disposed therein, each antenna with its axis tilted with respect to the tubular axis and parallel to one another.

98. (new) The tubular of claim 88, wherein the tubular comprises a plurality of antennas disposed within a plurality of grooves formed about the tubular external circumference, each antenna adapted to transmit or receive electromagnetic energy.

99. (new) The tubular of claim 98, wherein each groove is aligned with a tubular section having a plurality of openings formed therein to allow for passage of electromagnetic energy through the tubular wall and sealed to prevent fluid passage.

100. (new) The tubular of claim 98, wherein each groove is formed at an angle with respect to the longitudinal tubular axis.

101. (new) The tubular of claim 100, wherein at least two grooves are angled toward one another.

102. (new) The tubular of claim 100, wherein at least two grooves are uniformly parallel about the tubular circumference.

D' (cont'd)

103. (new) The tubular of claim 88, further comprising electronics to activate the antenna to transmit or receive electromagnetic energy in a selected orientation within the reservoir.

104. (new) The tubular of claim 88, further comprising a shield disposed on the tubular over the antenna, the shield providing passage to electromagnetic energy.

105. (new) The tubular of claim 88, wherein the groove is formed such that the openings lie substantially within the groove.

106. (new) A method for monitoring subsurface reservoir characteristics in a directed orientation, comprising:

(a) permanently disposing a tubular within a borehole traversing the reservoir, the tubular having an elongated metallic body with a longitudinal axis and a plurality of openings formed along its wall to allow for passage of electromagnetic energy therethrough, the openings formed at an angle with respect to the tubular axis and sealed to prevent fluid passage, a groove formed about the external circumference of the tubular in alignment with the openings and having an antenna disposed therein such that its axis is tilted with respect to the tubular axis, the antenna adapted to transmit or receive electromagnetic energy and disposed on the tubular such that the antenna is perpendicular to the openings at intersections of the antenna and openings;

(b) using the tubular to form a conduit for passage of subsurface fluids or gases through the reservoir; and

(c) activating the antenna to transmit or receive electromagnetic energy to determine a resistivity profile of the reservoir.

107. (new) The method of claim 106, further comprising determining the movement of fluids or gases within the reservoir from the resistivity profile.

108. (new) The method of claim 106, wherein step (c) includes activating the antenna to transmit or receive electromagnetic energy in a selected orientation within the reservoir.

D' (cont'd)

109. (new) The method of claim 106, wherein the groove is formed at an angle with respect to the longitudinal tubular axis.

110. (new) The method of claim 106, wherein the tubular openings are curved.

111. (new) The method of claim 106, wherein the antenna comprises a plurality of coils having non-parallel axes.

112. (new) The method of claim 106, further comprising coupling a wireline to the antenna, the wireline adapted to carry a signal to or from the antenna.

113. (new) The method of claim 106, wherein the groove comprises a plurality of antennas disposed therein, each antenna having its axis tilted with respect to the tubular axis and parallel to one another.

114. (new) The method of claim 106, wherein the tubular comprises a plurality of antennas disposed within a plurality of grooves formed about the tubular external circumference, each antenna adapted to transmit or receive electromagnetic energy.

115. (new) The method of claim 114, wherein each groove is aligned with a tubular section having a plurality of openings formed therein to allow for passage of electromagnetic energy through the tubular wall and sealed to prevent fluid passage.

D/ (cont.)

116. (new) The method of claim 106, further comprising disposing a shield on the tubular over the antenna, the shield providing passage to electromagnetic energy.